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ART. IX. — CRITICAL NOTICES.

1. — *Some Inquiries in the Province of Kemaon relative to Geology and other Branches of Natural Science*. By Assistant Surgeon JOHN MCCLELLAND, Member of the Royal College of Surgeons in London, &c. Calcutta, 1835. 8vo. pp. 384. With 10 Colored Plates.

It was always to us a matter of great regret, that we had no means of knowing any thing certain respecting the structure and composition of the famous Himalaya Mountains. High mountains present admirable facilities for ascertaining the relative situation and age of the rocky layers which repose upon their sides; and we justly supposed that the giant Himalaya had opened wide the book of nature; and left its pages for the instruction of man. At this time, while public attention in Europe and America is devoted to the interesting subjects of geological research, and the sublime revelations discovered on "*tables of stone*," call forth our feelings of admiration and delight, we cannot fail to rejoice to receive from the distant mountains of India, such evidence as is now before us, of the wide spreading of science in that portion of the world.

It is surprising, that the British government has never ordered a regular geological survey of its valuable possessions in India. It would seem, that a country teeming with mines of gold and diamonds, besides many other more useful minerals, should have called forth a most minute scrutiny, even were there nothing more to be gained than mere commercial wealth. In the few instances where the government has patronized the travels of scientific men, our author observes, that "the motives have been, rather the extension of commerce than the promotion of science; and often so exclusively, as was calculated to defeat, rather than to serve, even the mere object in view;" for they were generally so overloaded and crippled with instructions, that they were unable to make such explorations as would turn to any account. Such instructions are altogether useless, and worse than useless; for the scientific explorer knows best what ought to be done, while those who give the instructions perhaps know nothing about the country in question, and are wholly incompetent to direct a complicated and difficult survey.

The author visited India as an Assistant Surgeon in the army, and while performing the arduous and responsible duties

of his station, found time also to explore the geology and natural history of the country over which his detachment marched. His observations appear to have been made with care, and are very numerous and varied. At one time he is on the mountain-top with his hammer, examining the rocks and minerals; next we find him investigating the causes which produce some of the peculiar diseases of the country. Yet the work is reduced to a perfectly scientific form, and shows correct judgment in its arrangement.

Among the topographical remarks, we observe that he has ascertained the limits of perpetual snow on the Himalaya mountains to be at the altitude of 12,000 feet; and the highest peak of those mountains he estimates at 24,000 feet above the sea level, thus making it from 1,500 to 2,000 feet lower than it has formerly been reckoned.

It would be interesting to *know by exact barometrical measurements and triangulation, what is the true altitude of those mountains*. It is also very desirable, that some geologist should ascertain, whether there are any geological proofs that the diluvial waters had ever swept over their summits. We are aware, that those frozen regions would present almost insurmountable obstacles in searching into the evidence of such a catastrophe; but if it can be ascertained, the fact in itself would well be worth the labor and expense that would be required in determining its truth. How delightful must it be to the geological traveller, to stand on one of these lofty pinnacles, whence he could take in, at a single view, the conformation of the various mountains around, and see at a glance the manner in which they were raised to their present elevation through prodigious incumbent strata!

We beg leave to quote the following passage for the lovers of the picturesque. Those who have seen the roseate sky of Mt. Blanc at sunset, will be reminded of Alpine scenery.

"The hour of the day, at which these awfully interesting altitudes (the Himalaya Mountains) are seen most to advantage, is either before sunrise or after sunset, when their soft crimson forms are barely relieved from the glowing tints of the sky by the golden lights that play along their varied outlines." — pp. 29, 30.

"In the infancy of civilization (says Humboldt) high places were chosen by the people to offer sacrifices to their gods; the first altars, the first temples, were erected on mountains." So our author found, that in India, almost every mountain was distinguished by some traditional name, derived from a sacred rock, or ancient temple, which usually caps their summits. Occasionally the poor Hindoos sacrifice their lives, in attempting to scale

some inaccessible summit, where a grotesque form is considered an emblem of the Deity.

We shall not have room, in this short notice, to give the reader an account of the remarkable rocks and curious minerals described in detail by the author. We must content ourselves with the remark, that the mountains described are extremely similar to those of the Tyrolese Alps, and, like those remarkable peaks, consist of a great variety of stratified and unstratified rocks, such as gneiss, talcose, mica, slates, hornblende, rock-greenstone-trap, granite, dolomite, and various limestones. The formations called primary, transition, secondary, tertiary, and alluvial, are all distinctly recognized in the descriptions before us.

The dolomite mountains are the most remarkable, and, like those of the Tyrol, consist of lofty cones and precipitous masses of a white granular kind of magnesian limestone, which rise to a considerable elevation, and present escarpments that defy the feet of the mountaineer, and do not even support a sufficiency of soil to nourish vegetation.

Rocks of an ancient igneous origin evidently abound; but no recent volcanoes are described as occurring among the Himalayas. A few mines of copper and iron were visited by our author, who found cause severely to censure the system of tyrannical abuse practised by the native contractors or Teekedars and the owners of slaves. It seems, that the method of mining practised in obtaining copper ores, is such, that only a very low and narrow drift, called by miners a *creep*, is opened, which is merely wide enough to admit the body of a man. Into these low, dark, and muddy excavations, troops of children are driven, and are forced to labor during their whole lives in carrying out bags of the ore.

“At two of the mines there are from thirty to fifty children, under the age of twelve years, thus employed, without the hope of release during the period of their natural lives; but, if incapable of farther employment, they are left perfectly destitute.” — p. 175.

The geological portion of the work closes with an account of numerous Earthquakes, that have taken place in Kémaon. They appear to have been more violent within a few years, no less than eight shocks having taken place between December, 1831, and January, 1835. It is supposed that they are produced by violent subterranean movements of pent up gas or steam, and that they are the phenomena preceding or accompanying the eruptions of volcanic mountains. No volcanoes occur in the Himalaya chain, although there are abundance of hot springs that burst forth from their sides. The nearest volcanoes are those of

the Celestial Mountains, which lie to the North 720 miles distant, and have two cones, one of which is in active eruption, while the other is nearly extinct. The volcanic islands of the China Sea are 1,800 maritime miles distant. Our author is disposed to believe, that the abovementioned earthquakes proceed from the Celestial Mountains, but supposes that the shocks must necessarily augment in intensity as we approach the volcanic region. This is by no means necessary, at least within certain limits. An earthquake is as liable to be violent at a considerable distance from the chimney of its volcanic outlet, as at the very base of the volcano itself. At least such have been the results of our researches in Italy and Sicily.

We have not room to notice the catalogue of animals found in Kemaon, which is appended to this work, nor to enter into an analysis of the very interesting chapter on the causes of Goitre and Cretinism. The author has treated this latter subject in a manner that does him great credit as a medical philosopher; and every physician who reads his observations will at once perceive that there is such a science in nature as Medical Geology. We extract the following brief statement of some of his results.

"The proportion of the inhabitants of each rock, who are affected with Goitre and Cretinism, will stand to the healthy in the following order:

"Granite and gneiss — Goitre, $\frac{1}{500}$; Cretins, none.

"Mica-slate and hornblende-slate — Goitre, none; Cretins none.

"Clay-slate — Goitre, $\frac{1}{136}$; Cretins, none.

"Transition-slate — Goitre, $\frac{1}{243}$; Cretins, none.

"Steatitic sandstone — Goitre none; Cretins, none.

"Calcareous rocks — Goitre, $\frac{1}{3}$; Cretins, $\frac{1}{32}$.

"Are we to suppose that these interesting results are the effects of chance, or of an accidental association of circumstances confined to a particular spot? When we recollect, that a space of upwards of a thousand square miles has been made subject to the inquiry, and that in every portion of this space, the same invariable circumstances attended the presence of the disease, and that its absence was invariably distinguished by the absence of those circumstances, it is more philosophic to view them in the light of cause and effect."— pp. 310, 311.

2. — *Historical Sketch of Amherst, in the County of Hillsborough, in New Hampshire, from its first Settlement to the Year 1837.* By JOHN FARMER, Corresponding Secretary of the N. H. Historical Society. Second Edition, enlarged. Concord. 1837. 8vo. pp. 52.

MR. FARMER, the author of the above history, is well known as one of the most indefatigable and accurate antiquaries in the